Job Demands, Job Resources, and Flexible Competence: The Mediating Role of Teachers' Professional Development at Work

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Abstract

Building upon previous research that focused on the relationships between job demands, job resources and employee psychological well-being, this longitudinal research makes a unique contribution by relating job demands and job resources to Teachers' Professional Development (TPD) at Work, and flexible competence; the latter being a key factor in teachers' career development. This study was carried out among 211 teachers working in primary and secondary education in the Netherlands. TPD at Work appeared to be related to flexible competence, and proved to be a mediator between job resources, on the one hand, and flexible competence, on the other hand. Job resources positively enhanced TPD at Work, and in turn was related to flexible competence. Moreover, a direct negative relationship between job demands and flexible competence was found.

Keywords

Job demands and job resources; Teachers' Professional Development at Work; Flexible Competence; Longitudinal Design; Mediation

Introduction

Already since the acceptance of the Lisbon agreement (Council, 2000), lifelong learning and the necessity of enduring competence and career development of workers in all occupational sectors has been encouraged in the European Union, with teachers being no exception. Teachers' professional development (TPD) has clearly become a key issue on the political and school agendas in many countries worldwide (e.g. National Staff Development Council,

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2009; Organization for Economic Co-operation and Development, 2009). Initial education is only a first necessary step in the professional development of teachers. Hereafter, teachers must continue to work on their professional development. As participation in training courses proved often ineffective (Clarke & Hollingsworth, 2002), the range of learning activities has now been broadened to include (informal) learning at work as well (Cheetham & Chivers, 2001; Eraut, 2004). This may include activities at work such as keeping up-to-date, experimenting, reflecting, and collaborating (see Kwakman, 2003), which we have defined as TPD at Work.

Yet, little research has been conducted on whether TPD at Work is effective for teachers' competence development. Indeed, Cheetham and Chivers (2001) called for further research to investigate the correlations between particular learning mechanisms and the development of competence. It is even more important to investigate the relationship between TPD at Work and flexible competence. This is because teachers not only need to be an expert in their own field, they also need to be flexible to cope with professional change, such as more diverse student populations and higher social expectations and responsibilities (Organization for Economic Co-operation and Development, 2009). Flexible employees, including teachers, will develop greater benefit and further their career development from diverse experiences because they welcome changes (Van der Heijde & Van der Heijden, 2006). Therefore, flexible competence is an essential condition for teachers' career potential (Fugate, Kinicki, & Ashforth, 2004; Van der Heijde & Van der Heijden, 2006), which we have defined as employees' capacity to function both effectively and efficiently in their profession (that is being competent or an expert), and to cope effectively with change (being flexible).

Apart from the relationship between TPD at Work and flexible competence, more knowledge is needed on how to stimulate TPD at Work and flexible competence in school organizations. Educators, administrators, and policy-makers often lack the practical and

theoretical knowledge about which factors play an important role in stimulating TPD at Work in order to build flexible competence (Pont, Nusche, & Moorman, 2008). As, most of the time, TPD at Work and the development of flexible competence take place in the workplace context, we believe that the factors job demands and job resources play a key role. The Job Demands-Resources (JD-R) model was developed by Demerouti, Bakker, Nachreiner, and Schaufeli (2001) and has previously been argued to determine employee well-being and job-related learning (Bakker & Demerouti, 2007). Job demands and job resources are associated with active learning and growth, because it is hypothesized that by means of the implementation of job resources (e.g., a stimulating learning climate), "arousal" caused by job demands (e.g., work pressure and emotional demands) is changed in the direction of a direct efficient (learning) action (De Jonge & Dormann, 2003). Therefore, our contribution is to add to the body of knowledge regarding the predictive validity of job resources and job demands to help career counselors working in HRM departments in organizations (e.g., schools) in supporting teachers' professional development (McGuire & Cseh, 2006).

The validity of the JD-R model has been confirmed in the light of predicting employee health and well-being (e.g. Brough et al., 2013; Cotter & Fouad, 2013; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007) and organizational outcomes, like turnover intention and organization commitment (e.g. Hu, Schaufeli, & Taris, 2011). However, in the context of learning, and especially in the context of TPD at Work and flexible competence, the validation of the model is limited (Evers, Kreijns, Van der Heijden, & Gerrichhauzen, 2011a). Therefore, the purpose of this study is: 1) to propose a model that incorporates JD-R factors, TPD at Work, and flexible competence; and 2) to test that model in a longitudinal empirical research.

TPD at Work and Flexible Competence

It is important to investigate the relationships between participation in TPD at Work activities [that is, *how* one learns (Eraut, 2004)] and learning outcomes and results (*what* is learned; in our case flexible competence). Indeed, Cheetham and Chivers (2001) sought to investigate the correlations between particular learning mechanisms, and the development of particular kinds of competence. Similarly, Ericsson (2008) explained that expertise is the result of deliberate practice. Participation in TPD at Work activities is a form of deliberate practices worthwhile to investigate in this respect.

Hoyle and John (1995, p. 17) defined TPD as "The process by which teachers acquire the knowledge, skills and values which will improve the service they provide to clients." Based on Kwakman (2003), we defined TPD at Work as participation in the following learning activities at work: 1) Keeping up-to-date: reading; 2) Keeping up-to-date: participation in training related to work; 3) Experimenting; 4) Reflecting, 5) Collaborating with colleagues to improve the lesson; and 6) Collaborating with colleagues to improve school development (Evers, Kreijns, Van der Heijden, & Gerrichhauzen, 2011b). We focus on these activities because, as we will explain in the next paragraph, they appear to be key learning activities for teachers at work.

According to Kwakman (2003), a central goal of reading is keeping up-to-date by gaining new insights and advancements in the professional field. In addition to Kwakman (2003), and in line with Tynjälä (2008), we included participation in training related to work as a separate TPD at Work activity. Thereby, it is important that the content of training has a strong connection to the daily work activities of teachers, to increase its practical value. Experimenting is an intentional effort of teachers to undertake something new within the classroom and is a key aspect of TPD at Work (Kwakman, 2003). Many authors have studied teachers' experimenting (e.g. Benson, 2010; Geijsel, Sleegers, Stoel, & Krüger, 2009).

Additionally, in the area of teacher professional learning, many articles within the last decade have focused on reflection (Avalos 2011). Reflecting implies stepping back from an experience to consider the meaning to the self through the analysis and consequences of that experience (Daudelin, 1996). Reflective competencies have been considered to be key to one's career development (Akkermans, Brenninkmeijer, Huibers, & Blonk, 2013). Collaboration, in particular with colleagues, is essential to professional development as it provides teachers the necessary support for learning, and offers them a basis for critical thinking, and entails new challenges and ideas (Kwakman, 2003).

Flexible competence is described in terms of *occupational expertise* and *personal flexibility* (Evers et al., 2011a; Van Woerkom, 2003). Van Woerkom (2003) stated that competence (in our case expertise) and flexibility are highly related. Employees need to be flexibly competent, which means that they have the capacity to function both effectively and efficiently in a profession, and that they can cope effectively with change (see also Van der Heijden, 2003, who referred to employees who are both flexible and in possession of expertise as "flexperts"). *Occupational expertise* is defined as: (1) knowledge; (2) meta-cognitive knowledge; (3) skills; and (4) social recognition. The requirement of social recognition implies that, only if important key figures, such as one's supervisor and near colleagues, recognize someone as an employee having a high amount of capabilities, expertise exists. For a more in-depth explanation, we would like to refer to Van der Heijde and Van der Heijden (2006). Regarding the dimension of *personal flexibility*, Van der Heijde and Van der Heijden (2006, p. 455) stated that employees must adapt to changes in their work and labor market environment that they did not choose themselves: "As well as referring to the capacity for smooth transitions between jobs and between organizations, the concept encompasses adapting easily to all kinds of changes in the internal and external labor market." On the basis of the arguments that have been given in this section, we formulated:

Hypothesis 1: TPD at Work participation is positively related to flexible competence development.

Job Demands

Job demands are high for teachers (Commissie Leraren, 2007). Based on the work of Karasek (1979) and Bakker and Demerouti (2007), we include two job demand factors for teachers in this study: *work pressure* and *emotional demands*. Bakker and Demerouti (2007) also consider physical demands as a factor, but these demands are less relevant for our purposes, as the work of teachers does not include physical labor, like, for instance, those in the nursing profession (Evers et al., 2011a).

Work pressure means quantitative demands such as the pace of work and workload (Kwakman, 2003). *Emotional demands* refer to the extent to which the teaching job requires emotional investments (Kwakman, 2003). Based on De Dreu, Baas, and Nijstad (2008) and Gutnik, Walter, Nijstad, and De Dreu (2012), we assume a negative effect of job demands (as operationalized in this contribution) on the development of flexible competence, because of the negative psychological state it is expected to evoke. More specifically, we believe work pressure and especially emotional demands to result in a threat, instead of a challenge for teachers; see for the challenge versus threat mechanisms Lazarus (1991). This leads to the following hypothesis:

Hypothesis 2: Job demands are negatively related to flexible competence.

At the same time, we expect a positive effect of job demands on TPD at Work as demands that are perceived as a threat may also enhance persistence and perseverance (in our case to participate in TPD at Work) to alleviate the negative consequence the threat may also cause (see Gutnik et al., 2012). Indeed positive, significant, albeit small, effects of work pressure and emotional demands on participation in professional learning activities have been found (Kwakman, 2001). In a similar vein, Kwakman (2003) also found direct positive, significant

effects of work pressure and emotional demands on participation of teachers in TPD activities. Apparently, job demands may stimulate an 'active job', although job demands should not be too high, as this might lead to exhaustion and health-related problems (Bakker & Demerouti, 2007). We, therefore, hypothesized the following:

Hypothesis 3: Job demands are positively related to TPD at Work participation.

Job Resources

Job resources refer to resources at the level of the task and organization of work, at the level of social relations, or at the level of the organization at large and can stimulate personal growth, learning, and development (Bakker & Demerouti, 2007). Based on previous research, we focus on four key factors that influence TPD at Work activities, which can all considered to be job resources (Xanthopoulou et al., 2007): 1) learning climate; 2) social support from one's immediate supervisor; 3) social support from one's close colleagues; and 4) the learning value of the job. These job resources are the conditions, or states, which need to be fulfilled in an organization in order for the actual learning behavior (in our case TPD at Work) to take place (see also Bakker & Demerouti, 2007). First of all, Van Woerkom (2003) characterized learning climate as: 1) the time spent on collective reflection; 2) the amount of contacts between different teams and departments in an organization; 3) learning from the practices of other organizations; and 4) the tolerance towards the different opinions of "mavericks." A positive relationship was found between learning climate and two work-related learning activities, namely asking for feedback and reflection (Van Woerkom, Nijhof, & Nieuwenhuis, 2002). For teachers, social support from one's immediate supervisor and one's close colleagues seems to be essential (Kwakman, 2003). Kwakman (2003), in accordance with Bergers, Marcelissen, and De Wolff (1986), distinguished two functions of teachers' social support: the first function is instrumental, with the support being oriented towards the accomplishment of tasks; while the second is emotional, with the support being oriented

towards the emotional aspects of accomplishing the task. Next to instrumental and emotional support, two more functions are important: informational and appraisal support (House, 1981; Van der Heijden, 2003). Informational support enables individuals to help themselves to proceed with their tasks, and may include a variety of practical help. Appraisal support entails the transmission of information that is relevant for self-evaluation. All these kinds of social support can stimulate participation in TPD at Work activities (Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2011). For example, appropriate feedback stimulates learning, thereby enhancing job competence (Bakker & Demerouti, 2007), and presumably also flexible competence. The last job resource that is incorporated in our model comprises the learning value of the job for the employee him- or herself (Van der Heijden et al., 2005). Learning value is the extent to which the job nourishes the employee's further professional development (Boerlijst, Van der Heijden, & Van Assen, 1993). A job with high amount of learning value, *enables* a teacher to actually participate in TPD at Work activities [as learning value can be perceived as a condition or state of one's current job which stimulates actual learning (see Bakker & Demerouti, 2007)]. Jobs with high amount of learning value contribute to employee development, as empirical evidence showed (DeRue & Wellman, 2009). Recently, positive effects of learning climate, social support from one's immediate supervisor and one's close colleagues, and the learning value of the job, on TPD at Work activities have also been found (Evers, Van der Heijden, Kreijns, & Vermeulen, 2011). This leads us to hypothesize that:

Hypothesis 4: Job resources (learning climate, social support from one's immediate supervisor, social support from one's close colleagues, and the learning value of the job) are positively related to TPD at Work participation.

TPD at Work as a Mediator in a Model Predicting Flexible Competence

We assume that participation in TPD at Work activities (hereafter shortly described as TPD at Work) mediates the relationship between job demands and job resources on the one hand, and flexible competence on the other hand. Building up occupational expertise and personal flexibility requires incorporating, experimenting, and processing the newly learnt in daily work practice (Eraut, 2004). Flexible competence, which can considered to be an output variable (Hulpia & Valcke, 2004), is expected to be affected by job demands and job resources, via process-oriented TPD at work activities. However, as we argued in the previous section (where we stated that work pressure and emotional demands can also evoke a negative psychological state), a direct negative effect of job demands on flexible competence is also assumed. From this, we formulate the following:

Hypothesis 5: The relationship between job resources and flexible competence is mediated by TPD at Work participation.

Hypothesis 6: The relationship between job demands and flexible competence is partially mediated by TPD at Work participation.

As explained in Evers et al. (2011a), we finally expected an interaction effect between job resources and job demands on learning at work. The JD-R model states that job demands are not necessarily negative, and in combination with job resources could even stimulate learning (De Jonge & Dormann, 2003; Bakker & Demerouti, 2007). Moreover, Bakker, Van Veldhoven, and Xanthopoulou (2010) stated that job demands act as a moderator variable between job resources and learning. This leads to the following hypothesis:

Hypothesis 7: There is an interaction effect between job resources and job demands on TPD at Work participation.

Method

Sample and Procedure

Our study used a longitudinal design. Because time is needed for job demands and job resources (measured at T1) to have an impact on TPD at Work and flexible competence, TPD at Work and flexible competence were measured at T2 [see also a similar study in which there was a one year time lag between job demands, job resources and recovery opportunities in Rodriguez-Muñoz, Sanz-Vergel, Demerouti, & Bakker (2012)]. We utilized a web-based survey in all but one school, where a paper-and-pencil questionnaire was administered, using a Dutch sample. The survey was pilot tested with several experts in the field of primary and secondary education (teachers and directors) in light of the face validity of the operationalization. At T1, of the 2,385 teachers we approached, 692 teachers (118 primary teachers and 574 secondary teachers) returned a completely filled out survey (response rate of 29% for T1). Because one secondary school did not participate at T2, only 683 teachers of T1 received the questionnaire at T2 (one year later). Of these 683 teachers, 211 teachers returned a fully completed questionnaire for the second time (45 primary school teachers and 166 secondary school teachers), which implied a mean response rate of 31% at T2. These teachers were located in 9 primary school locations and 33 secondary school locations. The final sample characteristics can be found in Table 1.

******Insert Table 1 about here******

Measures

Flexible competence. We measured flexible competence with two scales: *occupational expertise* and *personal flexibility* (both as perceived by teachers), with 15 and 8 items respectively of the scales of Van der Heijde and Van der Heijden (2006). All items were scored using six-point rating scales. An example item of *occupational expertise* was: "I consider myself competent to engage in in-depth, specialist discussions in my job domain" (ranging from: 1 = very poor, to 6 = very good). Cronbach's alpha was .92. An example item

of *personal flexibility* was: “How easily would you say you can adapt to changes in your workplace?” (ranging from: 1 = a very great deal of difficulty, to 6 = very little difficulty). Cronbach’s alpha comprised .83. For the calculation of all scale means in this study, one missing item per respondent was allowed.

TPD at Work. We based the scales for *TPD at Work* on Evers et al. (2011b), like Kwakman (2003), utilizing a six-point rating scale (1 = hardly ever, to 4 = often), as teachers were asked to indicate how often they participated in each professional learning activity. The first scale, *keeping up to date: reading*, consisted of three items. Conbach’s alpha was .79. An example item was: “Studying subject matter literature.” The second scale, *keeping up-to-date: participation in training related to work*, had two items. Cronbach’s alpha comprised .71. An example item was: “Participation in a training course that centers around subject matter pedagogy.” The third scale, *experimenting*, consisted of five items. An example item was: “Testing alternative teaching materials in class.” Cronbach’s alpha was .83. *Reflecting*, the fourth scale, had four items. An example item was: “Reflecting on my strong and weak points.” Cronbach’s alpha comprised .68. Three items were used for the fifth scale, *collaborating with colleagues to improve the lesson*. An example item was: “Preparing lessons with colleagues.” Cronbach’s alpha was .64. Finally, the sixth scale, *collaborating with colleagues to improve school development*, was based on four items. An example item was: “Give an opinion together with colleagues about school organizational matters to the school management.” Cronbach’s alpha comprised .67.

Work pressure and emotional demands. Our measurement scale for *work pressure* consisted of seven items (Kwakman, 2003, originally Van Veldhoven & Meijman, 1994), and utilized a four-point scale (1 = hardly ever, to 4 = always). An example of an item was: “Are you working under time pressure?” Cronbach’s alpha was .88. The scale emotional demands used four items (Kwakman, 2003, originally Van Veldhoven & Meijman, 1994), and also

utilized a four-point scale (1 = hardly ever, to 4 = always). An example item was: “Are you confronted in your work with aspects that affect you personally?” Cronbach’s alpha comprised .67.

Learning climate. To create the scale for *learning climate,* we selected five items from the learning climate scale of Van Woerkom (2003). All selected items were measured on a four-point scale (1 = hardly ever, to 4 = always). An example item was: “Experiences are exchanged with schools that are facing similar problems.” Cronbach’s alpha was .68.

Social support from one’s immediate supervisor and *social support from one’s close colleagues* were both measured with four items using a six-point rating scale (Van der Heijden, 2003). Example items include: “Is your immediate supervisor, in general, ready to help you with the performance of your tasks?” and “are close colleagues, in general, ready to help you with the performance of your tasks?” [both scales ranging from: 1 = in my opinion, (s) he shows little willingness to help me, to 6 = in my opinion, (s) he is very willing to help me]. Cronbach’s alpha’s were respectively .87 and .75.

Learning value of the job. The scale for *learning value of the job* was based on Van der Heijden and colleagues (2005), and consisted of six items, each using a six-point scale (ranging from 1 = strongly disagree, to 6 = strongly agree). An example of an item was: “My job enables me to further develop my talents.” Cronbach’s alpha was .86.

Data Analysis

Because of the hierarchical nature of our data (that is, individual employees are nested within 42 school locations), we inspected whether there was enough statistical independence or, rather, whether there was a salient school location level effect. To empirically test this, we separately calculated the Intra-Class Correlation (ICC) for each dependent variable (i.e., for the mediator TPD at Work, and for the outcome variable flexible competence) (Garson, 2011). Our analyses showed that 6.70% of the variance in *TPD at Work,* and 5.57% of the

variance in *flexible competence* was attributed to the organizational (that is school location) level. Because the two vary only slightly by school, we decided to treat our observations as statistically independent (see also Hox, 2002).

Further preliminary analyses showed that the demographic variables of gender, educational qualification, age and appointment in full-time equivalent (the last variable measured at T2), were neither systematically related to the mediator *TPD at Work*, nor to the outcome variable *flexible competence*, at a .05 significance level. Therefore, in order to facilitate model estimation, we excluded these demographic variables from all further analyses.

We tested all hypotheses using Structural Equation Modeling (SEM) utilizing the Mplus 7 software package, and following the method of Hayes (2013). Compared to hierarchical regression analysis, SEM has two main advantages: 1) SEM permits calculating and correcting for measurement error; and 2) Measures of fit of the models under study can be provided. We used the χ^2 (*chi-square)* to assess the degree of fit between the model and the data. Furthermore, the Root Mean Square Error of Approximation (RMSEA) was used to assess model fit. Models with RMSEA < .08 indicate an adequate fit between the model and the data (Browne & Cudeck, 1993). In addition, we calculated the TLI (Tucker-Lewis Index), with values close to .95 (for large samples) being indicative of a good fit (see Hu & Bentler, 1999). Because these indices are dependent on sample size, we also inspected the Comparative Fit Index (CFI), as recommended by Marsh, Balla, and Hau (1996). This index should be .90 or higher (Hoyle, 1995).

Results

Descriptive Statistics

Table 2 shows the descriptive statistics of means, standard deviations, reliability coefficients, and inter-correlations between all model variables. Most indices appeared to have sufficient

alpha levels of > .70 (Nunnally, 1978). However, five indices had a Cronbach's alpha level between .60 and .70. Cronbach's alpha of *learning climate* was .68. The Cronbach's alpha of *emotional demands* was .67. Further, this was the case for three indices of TPD at Work: *reflecting* (Cronbach's alpha was .68), *collaborating with colleagues to improve the lesson* (Cronbach's alpha was .64), and *collaborating with colleagues to improve school development* (Cronbach's alpha was .67). According to Loewenthal (2001), a slightly lower index (of about .60), is acceptable in case: 1) there is good evidence for validity; 2) there are good theoretical reasons for the scale operationalization; and when 3) the scale is relatively short (less than about 10 items). These criteria applied to all five indices with a Cronbach's alpha level between .60 and .70.

To test the validity of the six-dimensional factor structure of the measurement instrument for *TPD at Work*, we compared the outcomes of a first- and second-order Confirmatory Factor Analysis (CFA). Both first (χ^2 = 292.83; RMSEA = .057; CFI = .91; TLI = .89) and second-order (χ^2 = 309.223; RMSEA = .057; CFI = .90; TLI = .89) CFAs revealed the six underlying dimension [$\Delta\chi^2(9)$ = -16.19, p > .05, calculated according to the MLM (Maximum Likelihood Mean-adjusted chi-square difference test)]. We choose the second-order CFA because it allows us to use one single latent variable of TPD at Work in our hypothesized structural model.

******Insert Table 2 about here******

Testing the Hypotheses

We started by carefully checking whether the observed variables had a univariate and multivariate normal distribution. All observed variables were univariate normally distributed. The multivariate distribution was non-normal (z-statistic = 6.83; Bentler, 2005, suggested that z values < 5.00 are indicative of the data being normally distributed), though the deviation from normality was small. Next, we proceeded with our SEM analyses. To test the first four

formulated hypotheses we used SEM analyses, utilizing the Mplus version 7 software package. We used the Mplus software, and more specifically the MLM method, which is a robust method for dealing with non-normal data. We tested the fit of our hypothesized structural model. In line with scholarly literature that reports that job demands and job resources are negatively correlated (see Bakker & Demerouti, 2007), we also included this in our model.

We included an error correlation between the indicators *learning climate* and *learning value of the job*, and between the indicators *keeping up-to-date: reading* and *experimenting*. According to Byrne (2009), it is possible to add error correlations with relatively large Modification Indices (MIs), but only when good arguments are given. The MI of the error correlation between *learning climate* and *learning value of the job* was high (13.45), with $\Delta\chi^2(1) = 14.11$, $p < .01$. Indeed, these two may be interpreted as related concepts, which may explain that some item overlap exists between them. The MI of the error correlation between *keeping up-to-date: reading* and *experimenting* was reasonably large (5.24), with $\Delta\chi^2(1) = 5.52$, $p < .05$. A possible explanation might be that teachers' participation in experimenting is triggered by reading literature. In addition to reasonable fit indices of the measurement model ($\chi^2 = 127.48$, df = 71, RMSEA = .061, CFI = .90, TLI = .87), which showed all constructs to be distinct, all remaining indicators appeared to have a significant and substantial loading on the intended factors ($\geq .40$).

The model we tested appeared to fit the data reasonably well ($\chi^2 = 109.26$, $df = 70$, RMSEA = .05, CFI = .93, TLI = .91). See Figure 1, for all the β coefficients in our model (all coefficients are significant, $p < .05$, except for the correlation between job demands and job resources, which was not significant). The model explained 29% of the variance in TPD at Work, and 54% of the variance in flexible competence. The β coefficient of TPD at Work on

flexible competence was .74 ($p < .01$). In conclusion, Hypotheses 1, 2, 3 and 4 were fully confirmed by our findings.

Next, a Hayes' process analysis of Model 4 (2013) was conducted to investigate the mediation and moderation effects formulated in Hypotheses 5, 6 and 7. In order to test our hypotheses, we had to calculate the latent variables job resources, job demands, TPD at Work and flexible competence, by taking the mean of the four job resource indicators (learning climate, social support from one's immediate supervisor, social support from one's close colleagues, and the learning value of the job), the two job demands indicators (work pressure and emotional demands), the seven TPD at Work indicators (reflecting, work-related training, reading, collaborating lesson, experimenting, and collaborating school), and the two flexible competence indicators (occupational expertise and personal flexibility). The sufficient loadings of the indicators of each latent variable in our SEM analysis assured us the indicators represented the latent variables and consequently that we could calculate the mean in this way. To test mediation the following relations needed to be tested:

1. Whether there is a direct relation between the mediator and outcome variable.
2. Whether there is a direct relation between the independent variable and the mediator.
3. Whether the indirect effect of the independent variable on the outcome variable, through the mediator, is significant (using a bias corrected and accelerated bootstrap method, which does not necessitate normally distributed data).
4. Whether the direct effect of the independent variable is significant when corrected for the mediation or indirect effect (that is whether there is full or partial mediation).

First we tested Hypothesis 5, whether *the relationship between job resources and flexible competence is mediated by TPD at Work participation.* The indirect effect of the independent variable job resources on the outcome variable, flexible competence, through the mediator, TPD at Work, is indeed significant (see Table 3, $B = .06$, $p < .05$). The direct effect of the

independent variable job resources is not significant when corrected for the mediation or indirect effect TPD at Work (B = .05, p > .05), which confirms full mediation (see the bolded arrow in Figure 1). Therefore, we can conclude that Hypothesis 5 is fully confirmed.

Then, we tested hypothesis 6, whether *the relationship between job demands and flexible competence is partially mediated by TPD at Work participation.* The indirect effect of the independent variable job demands on the outcome variable, flexible competence, through the mediator, TPD at Work, was not significant (see Table 3, B = .05, p > .05). In addition, the direct effect of the independent variable job demands was significant when corrected for the mediation or indirect effect TPD at Work (B = -.14, p < .05). We must conclude that hypothesis 6 could not be confirmed.

Finally, we tested hypothesis 7. We applied the Hayes' process analysis using Model 7 in which the predictor is job resources, the moderator is job demands (in the relationship between job resources and TPD at Work), the mediator is TPD at Work and the dependent is flexible competence. We could not find an effect of the interaction variable job resources * job demands on TPD at Work (B = -.09, p > .05, lower limit = -.25, upper limit = .08, which includes zero and therefore is not significant), which means that Hypothesis 7 has to be rejected using our data.

******Insert Table 3 about here******

Discussion and Conclusion

Reflections

Because learning at work appears to be essential for teachers to develop themselves professionally, it is vital to carefully study its predictive validity and how to stimulate it. The purpose of this article was to achieve a better understanding of how Teachers' Professional Development (TPD) at Work is enhanced by job demands and job resources (JD-R) and to investigate its relationship with flexible competence. JD-R-related factors are key factors in

the workplace of teachers, and previous research hypothesized that they are associated with active learning and growth (De Jonge & Dormann, 2003). Because most research focused mainly on the JD-R model in relation to predicting employee health, well-being, and organizational outcomes, it is relevant to pay attention to this gap in the literature. In addition, as the majority of previous research was cross-sectional in nature, our longitudinal design makes a valuable contribution to the field.

The JD-R factors, TPD at Work, and flexible competence were investigated in one SEM model. The majority of our Hypotheses were confirmed, except for Hypothesis 6 (the relationship between job demands and flexible competence is not partially mediated by TPD at Work participation, using our data), and Hypothesis 7 (we could not find an interaction effect between job demands and job resources on TPD at Work). Similar difficulties in finding interaction effects have been found in previous empirical research using the related Job Demands Control (JDC) model (e.g. De Jonge & Dormann, 2003) and more recently in the JD-R model (Brough et al., 2013). A possible explanation might be the mismatch between job demands, job resources and job outcomes with regard to the same domain of human psychological functioning (Brough et al., 2013).

Hypothesis 1 was confirmed: TPD at Work appeared to have a strong relationship with flexible competence which underlines the importance of TPD at Work. In addition, job demands and job resources were positively related to TPD at Work (Hypotheses 3 and 4). Job demands appeared to be negatively related to flexible competence, which confirmed Hypothesis 2: there is a loss of perceived flexible competence, in case job demands increase. This implies that job demands is positively related to TPD at Work, and negatively related to (perceived) flexible competence. These outcomes underline the dual character of job demands. However, from our mediation analysis we could not demonstrate that TPD at Work may compensate for the loss in flexible competence that job demands may also cause. More

research is necessary in this regard. Mediation analyses showed that flexible competence can be enhanced by job resources, via TPD at Work (Hypothesis 5). This supports the findings of Thoonen et al. (2011), who found TPD (more specifically reading, experimenting and reflecting) to be a significant mediator between organizational resources and teaching practices. The positive relationship between job resources and TPD at Work is in line with a central proposition of the JD-R model: job resources foster employees' growth, learning and development (Bakker & Demerouti, 2007).

Limitations and Recommendations for Further Research

First, because we used self-ratings for the predictors, the mediator, and the outcome variables, there is a potential risk of common-method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). The common-method bias may be combated by incorporating other rating sources. However, as Podsakoff et al. (2003) stated, when it is not possible to obtain data from different sources, another potential remedy is to separate the measurement of the predictor and criterion variables by introducing an appropriate time lag between the measurement of the predictors (i.e. job demands and job resources at T1) and the criterion variables (i.e. the effects, TPD at Work and flexible competence at T2). This was our procedure for conducting the longitudinal study. Another remedy against common-method bias recommended by Podsakoff et al. (2003) is to protect respondents' anonymity. We combined this method with the previous method (a time lag) by using a linking variable in the survey that did not reveal the respondent's identity. Obviously, notwithstanding our longitudinal design, no causality can be claimed. Moreover, the relationship between TPD at Work and flexible competence is correlational in nature, as both factors are measured at one moment in time. Further research is needed to conclude more safely about the directions of the model relationships. Second, with regard to further research, personal resources have been mentioned to play a role in explaining the relationship between job resources and work engagement (Xanthopoulou et al.,

2007). Future research could investigate whether personal resources also play a role in explaining job resources, TPD at Work and flexible competence. Third, further research could explore the extent to which our findings would extrapolate to other occupational sectors and/or to other countries (Fouad & Arbona, 1994).

Practical Implications

Our study showed that TPD at Work is strongly related to flexible competence, a key factor in employees' career development (Fugate et al., 2004; Van der Heijde & Van der Heijden, 2006). Therefore, it is important not to focus career policy in schools solely on traditional training activities, which is currently the common situation (Commissie Leraren, 2007), but to include TPD at Work activities as well. Moreover, career counselors and vocational psychologists could also explicitly pay attention to these kinds of learning activities in their conversations with teachers and in developing assessment instruments. We assume that these practices are beneficial for other types of working organizations as well.

In enhancing TPD at Work and flexible competence, managers and career counselors alike need to be aware of common job demands and job resources in the workplace. TPD at Work is not something that simply happens by itself: the right job conditions need to be put in place. For example, in facilitating people to learn from each other, it is important that they can meet and have ample time to interact with each other, in a climate where openness and learning from mistakes are key characteristics. In other words, one should focus on creating a sound learning climate (e.g. learning from the practices of other schools, and instilling tolerance for different opinions), stimulating supervisors and close colleagues to provide social support, and increasing the learning value of the teachers' job. Support can easily be given through compliments and constructive feedback (both on positive achievements and dealing with recommendations for improvement), and backed up with practical solutions and clues on how to enhance the performance. Van der Heijden, De Lange, Demerouti, and Van der Heijde

(2009) stated that management, especially one's immediate supervisor, should pay attention upon facilitating careers across working life.

In addition to providing more job resources, school managers and career counselors need to care about the amount of job demands as the latter, given its dual character, may have a negative effect on the development of flexible competence. Relevant job demands for teachers are work pressure (the pace of work and workload) and emotional demands (the emotional investment in the teaching job). In order to keep these demands functional, conversations with employees about their perceived workload and other job demands should be held regularly. Apart from the rising responsibility for life-long employability that the individual employee has to bear (Van der Heijden et al., 2009), the working organization is still a crucial factor in professional and career development.

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Table 1.

Sample Characteristics in Percentages, *n* = 211

Characteristic	Primary Teachers *%*	Secondary Teachers %
Gender		
Men	17.8	49.4
Women	82.2	50.6
Education		
Low	-	3.6
Middle	4.4	.6
Bachelor	95.6	71.1
Master	-	24.7
Age		
< 21		
21–25	6.7	13.3
26–30	13.3	8.4
31–35	11.1	1.8
36–40	13.3	10.8
41–45	15.6	13.3
46–50	15.6	13.3
51–55	15.6	22.3
56–60	6.7	16.9
61–65	2.2	-
> 65	-	-

Table 2.

Means, Standard Deviations, Reliability Coefficients (Cronbach's Alphas Italicized on the Diagonal), and Inter-Correlations between the Model Variables, *n* = 211

	M	SD	Range	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. learning climate t1	2.07	.48	1-4	.68													
2. social support supervisor t1	3.62	.98	1-6	.37**	*.87*												
3. social support colleges t1	3.73	.78	1-6	.32**	.45**	*.75*											
4. learning value t1	4.24	.83	1-6	.42**	.31**	.18**	*.86*										
5. work pressure t1	2.44	.59	1-4	-.09	-.13	-.08	-.08	*.88*									
6. emotional demands t1	2.15	.50	1-4	-.06	-.08	-.01	-.04	.30**	*.67*								
7. reflecting t2	2.42	.57	1-4	.03	.32**	.21**	.12	.09	.17*	*.68*							
8. work training t2	2.05	.70	1-4	.25**	.27**	.08	.25**	.02	.02	.22**	*.71*						
9. reading t2	2.79	.71	1-4	.00	.04	-.04	.08	.02	.00	.25**	.23**	*.79*					
10. collaborating lessons t2	2.45	.63	1-4	.07	.24**	.24**	.07	.01	.08	.51**	.24**	.22**	*.64*				
11. experimenting t2	2.35	.64	1-4	.04	.15*	.02	.11	-.10	.02	.44**	.25**	.37**	.37**	*.83*			
12. collaborating school t2	2.57	.60	1-4	.15*	.26**	.15*	.18**	.17*	.14*	.50**	.36**	.36**	.54**	.39**	*.67*		
13. occupational expertiset2	4.63	.53	1-6	.00	.18**	.18**	.08	-.04	-.04	.40**	.22**	.30**	.30**	.31**	.32**	*.92*	
14. personal flexibilityt2	4.28	.58	1-6	.20**	.21**	.07	.27**	-.07	-.07	.28**	.26**	.28**	.21**	.40**	.33**	.48**	*.83*

Note. * = Correlation was significant at the .05 level (two-tailed)

** = Correlation was significant at the .01 level (two-tailed)

Table 3.

Significance tests of the indirect (bias corrected and accelerated bootstrap) effects of the independent variables. *B* indicates the strength of the indirect effect, *n* = 211

Independent	Mediator	*B*	95% Confidence interval	
			Lower Limit	Upper Limit
Job resources	TPD at Work	.06*	.03	.10
Job demands	TPD at Work	.05	-.03	.13

Note. * = $p < .05$

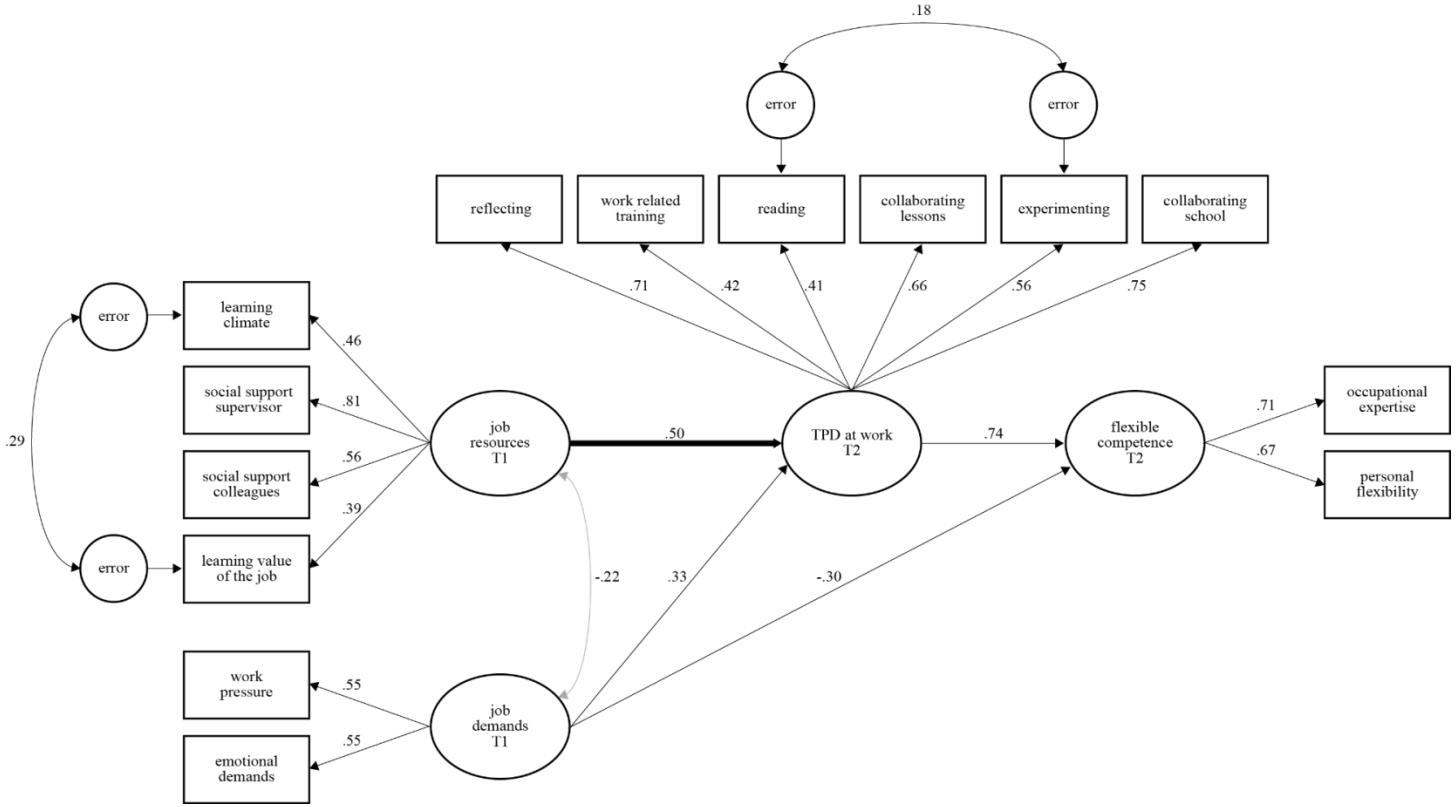

Figure 1. Tested Longitudinal Model, with JDR Predictors at T = 1; TPD at Work, Flexible Competence at T = 2. All coefficients are significant, $p < .05$, except for correlation between job demands and job resources, $n = 211$